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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Andrei Feldman

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EXAMINER

ABDI, AMARA

ART UNIT

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2624

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,559	Applicant(s) FELDMAN, ANDREI	
	Examiner Amara Abdi	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,11-13,15,17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) 5,7-10,14,16 and 19-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,11-13,15,17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 11, 2008 has been entered.

2. Applicant's response to the last office action, filed August 11, 2008 has been entered and made of record.

3. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Remarks:

4. The applicant argues that the Final rejection is responsive to a communication filed February 28, 2008 and not April 16, 2008.

In response to the Applicant's arguments the Examiner is agreed and apologizes for this mistake. So the Final rejection is responsive to the communication filed February 28, 2008.

5. The applicant argues that the finality of the instant office action is premature. Furthermore, the Applicant asserts that while the prior response did not include some minor amendments to the claims, those amendments were purely cosmetic, and did not

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introduce any new limitations that could not have been foreseen. It is also pointed out that the Examiner did not state that the new grounds for rejection were required by the amendments entered.

However, in response to the Applicant's arguments, the Examiner disagrees. The amendments were not cosmetic. For example the limitation: "comparing said first and said second digital image to produce an artifact-corrected computer representation" is not cosmetic, since it requires a further search. In response to the Applicant's arguments that the Examiner did not state that the new grounds for rejection were required by the amendments entered, the Examiner would like to point out the Applicant to (Page 1, lines 3-4) of the office action where the Examiner clearly stated: "Applicant's arguments with respect to claims 1-4, 6, 11-13, 15, and 17-18 have been considered but are moot in view of the new ground(s) of rejection", which means that the new grounds for rejection were required by the amendments entered.

Therefore, the finality was proper.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-4, 6, 11-13, and 15-18 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation "said jaw". There is insufficient antecedent basis for the limitation in the claim. It is

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unclear if this limitation of the claim is intended to refer to “a patient jaw” on line 2 of claim 1. However, the “jaw” differs from the “patient jaw”. The examiner suggests changing the “jaw” to the “patient jaw”.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 6, 13, 15, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poirier (US 5,725,376) in view of Baron (US 6,859,565) and Cascione et al. (US 5,800,168).

(1) Regarding claims 1:

Poirier discloses the forming a negative impression (physical object or model) (column 6, line 43-46) of the patient jaw (gum surfaces and teeth) (see the Abstract, line 5-9).

However, Poirier does not teach explicitly the producing of a first digital image of the negative jaw impression, and producing of a second digital image of the negative jaw impression and the patient jaw, including the artifacts, and comparing the first digital image and the second digital image to produce an artifact- corrected computer representation of the negative impression and the patient jaw.

(a) Obviousness in view of Baron:

Baron teach a method for the removal of flash artifacts, where producing of a first digital image (104 in Fig. 1, col. 2, lines 10-12) and producing of a second digital image including the artifacts (112 and 114 in Fig. 1, col. 2, lines 38-46 and lines 53-56), and comparing the first digital image and the second digital image to produce an artifact-corrected computer representation (116 in Fig. 1, col. 2, lines 57-59).

It is desirable to remove or modify the artifacts automatically. The Baron approach, where subtracting the artifact image from the first image is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Baron teaching, where subtracting the artifact image from the first image, with the Poirier teaching of the negative jaw impression, because such combination provides the removal or the modification of artifacts automatically (col. 1, lines 28-30).

(b) Obviousness in view of Cascione et al.

Cascione et al. teach an adjustable guiding device for positioning dental implants, where the artifacts in the radiograph are metal (col. 9, lines 21-26).

It is desirable to facilitate the implant surgery and increases the chances of full success thereof. The Cascione's approach where avoiding the metal artifacts in the radiograph is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Cascione's teaching with the combination Poirier and Baron, to substitute Baron's artifacts due the flash, with the

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Cascione's metal artifacts in the patient mouth, because such feature facilitates the implant surgery and increases the chances of full success thereof (col. 2, lines 21-23).

(2) Regarding claim 2:

Poirier further discloses the method, comprising adjusting the negative jaw impression during formation (column 5, line 41-43, and column 6, line 42-46), (it is read that the negative jaw impression is adjustable, since it is able to turn in about two direction) to allow easy manipulation of the impression (column 6, line 43-46) on the recipient jaw (see the Abstract, line 5-9), (the negative jaw impression is read as the physical model, and the recipient jaw is read as the gum surfaces and teeth).

(3) Regarding claim 3:

Poirier further discloses the method, comprising setting one or more tooth implant models in said negative jaw impression, prior to producing said images (column 8, line 46-48), (it is read that the heads and teeth are implanted in the physical model, then generating a 3D computer model).

(4) Regarding claim 6:

The combination Poirier, Baron, and Cascione et al. teach the parental claim 1. Furthermore, Baron teaches the method, where the first and second digital image comprises voxel (pixels) (Baron: col. 3, lines 1-2).

(5) Regarding claim 13:

The combination Poirier, Baron, and Cascione et al. teach the parental claim 1. Furthermore, Poirier teaches the producing of drilling template (col. 2, lines 23-25).

(6) Regarding claim 15:

The combination Poirier, Baron, and Cascione et al. teach the parental claim 1.

Furthermore, Poirier teaches the producing of the patient jaw (gum surfaces and teeth) (Poirier: see the abstract, line 5-9); and Baron teaches the corrected computer representation (116 in Fig. 1, col. 2, lines 57-59).

(7) Regarding claim 17:

The combination Poirier, Baron, and Cascione et al. teach the parental claim 15.

Furthermore Poirier discloses the using of recipient jaw model (Poirier: column 6, line 43-46 and the Abstract, line 5-9) to produce a drilling template (Poirier: column 3, line 21-29).

(8) Regarding claim 18:

The combination Poirier, Baron, and Cascione et al. teach the parental claim 1.

Furthermore, Poirier discloses the using of the negative impression (physical object or model) of the recipient jaw (gum surfaces and teeth) (Poirier: column 6, line 43-46) (Poirier: see the Abstract, line 5-9) to produce the drilling template (Poirier: column 3, line 21-29).

10. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poirier, Baron, and Cascione et al., as applied to claim 1 above, and further in view of Kruger (US 5,927,982).

(1) Regarding claim 4:

The combination Poirier, Baron, and Cascione et al. teach the parental claim 1. However Poirier, Baron, and Cascione et al. do not teach explicitly the incorporating of one or more reference markings in the negative jaw impression wherein said reference markings are visible in said first and second images.

Kruger teaches placing in the pontic teeth a radio-opaque landmarks which will be visible in the first and second images (column 3, line 34-40), (the first and second images are read as CT-scan or any appropriate imaging system).

It is desirable to clearly show the outline of the pontic teeth in relation to vertical and to the occlusal plane and surfaces needed for optimum placement of the implant. The Kruger teaching where placing in the pontic teeth a radio-opaque landmark which will be visible in the first and second images is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Kruger's teaching, where placing in the pontic teeth a radio-opaque landmark which will be visible in the first and second images, with the combination Poirier, Baron, and Cascione et al., because such feature, clearly shows the outline of the pontic teeth in relation to vertical and to the occlusal plane and surfaces needed for optimum placement of the implant (column 3, line 46-49).

(2) Regarding claim 12:

The combination Poirier, Baron, and Cascione et al. teach the parental claim 1. However Poirier, Baron, and Cascione et al. do not teach explicitly the setting of one or more drilling trajectories in the artifact-corrected computer representation.

Kruger teaches the setting of one or more drilling trajectories in the artifact-corrected computer representation (Fig. 3, column 4, line 60-67, and column 5, line 1-6), (the setting of one or more drilling trajectories is read as the same concept as the setting of three dimensional orientation table, and the artifact-corrected computer representation is read as CT- scan).

It is desirable to clearly show the outline of the pontic teeth in relation to vertical and to the occlusal plane and surfaces needed for optimum placement of the implant. The Kruger teaching, where setting of one or more drilling trajectories in the artifact-corrected computer representation is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Kruger's teaching, where setting of one or more drilling trajectories in the artifact-corrected computer representation, with the combination Poirier, Baron, and Cascione et al., because such feature, clearly shows the outline of the pontic teeth in relation to vertical and to the occlusal plane and surfaces needed for optimum placement of the implant (column 3, line 46-49).

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poirier, Baron, and Cascione et al., as applied to claim 1 above, and further in view of Lichkus et al. (US 6,488,503).

The combination Poirier, Baron, and Cascione et al. teach the parental claim 1. Furthermore, Baron teaches the forming of an image (116 in Fig. 1, col. 2, lines 57-59). comprises the first image (104 in Fig. 1) and the second image (112 and 114 in Fig. 1,

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col. 2, lines 38-46 and lines 53-56), wherein the first image is free of an artifacts (col. 2, lines 4-6), (in the step 104, the image is free of an artifacts).

However, the combination Poirier, Baron, and Cascione et al. do not teach explicitly the upper portion of an image and the lower portion of an image.

Lichkus et al. teach the forming an image comprising at least one upper tooth (the upper portion of the first image), and at least one lower tooth (the lower portion of the second image) (Fig. 10A, column 10, line 18-21).

It is desirable to provide artificial teeth with an enamel layer having zones of constant thickness. The Lichkus et al. approach, where forming an image comprising at least one upper tooth and at least one lower tooth is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply Lichkus et al. teaching, where forming an image comprising at least one upper tooth and at least one lower tooth, with the combination Poirier, Baron, and Cascione et al., because such feature provides artificial teeth with an enamel layer having zones of constant thickness (column 2, line 51-52).

Contact Information:

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amara Abdi whose telephone number is (571)270-1670. The examiner can normally be reached on Monday through Friday 8:00 Am to 4:00 PM E.T..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jingge Wu/
Supervisory Patent Examiner, Art Unit 2624

/Amara Abdi/
Examiner, Art Unit 2624